M. Ferry, the Minister for Public Instruction, enabling him to take with him a trained botanist. In his last address before the Geographical Society of Paris he entered into many interesting details showing that the negro populations of the region he is to visit were half-civilised races susceptible of intercourse with European nations.

THE public subscription for M. Miclucho-Maclay gives very good results. On November 1 the sum had already reached, at the *Golos* office alone, above 2,786 roubles (about 278*l*.)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The anniversary dinner of the Cambridge Philosophical Society is to take place in the new hall of Pembroke College on November 29, at 7.15, under Prof. Newton's presidency. The occasion will be clouded by many memories of Professors Maxwell and Garrod.

The Botanic Gardens Syndicate are to obtain plans and estimates for the erection of a curator's house in the Garden.

There is much questioning as to Dr. Power's justification for regarding the coming changes as a "revolution," especially in laying down the office of Vice-Chancellor. A reform in which the University concurs to a great extent can hardly be regarded with such grave anxiety. Dr. Power, in the speech referred to, said that the new comparative anatomy buildings had been for a considerable period in use, although the dispute as to the respective liabilities of the University, the architect, and the contractors for the accident to the roof and floors is not yet settled. The recent addition to the rooms for human anatomy had proved satisfactory. Dr. Power again warned the University of the rapid rate of increase of permanent expenditure and the very uncertain nature of the income, depending so largely on the fees and dues from members of the University. He acknowledged that the department of chemistry had been existing on a starvation allowance, and that some professors and lecturers had been paying heavy expenses out of their own pockets rather than make fresh demands on the already overburdened finances of the University.

Dr. E. H. Perowne enjoys the singular felicity of having become Master of Corpus Christi and Vice-Chancellor in one year. Mr. G. F. Browne, the senior proctor, desires to maintain strongly the college system as against the lodging-house system, especially in regard to discipline. But this would not involve any diminution in the urgent need for more thorough University science teaching, and the more complete recognition as a duty, of banishing the mere schoolboy and the idler, or the mere athlete, to the schools or elsewhere, instead of employing such ability as is here set to lecture in the ABC of subjects.

At Christ's College it is proposed to give open scholarships and exhibitions in natural science for entrance in October, 1880, by examination on Friday, March 19, and following days. He must show that he will probably be able to pass the "Little-go" at latest by the end of his third term of residence. A candidate may gain a scholarship for mathematics or classics in combination with natural science. No candidate will be admitted who has kept any actual terms by residence, but there will be no limitation of age. In mathematics there will be papers in Euclid, algebra, plane trigonometry, and conic sections, geometrical and analytical. Candidates for natural science scholarships must all take chemistry, and also either physics or biology in addition. The principles of spectrum analysis are included in theoretical chemistry, physical measurements and manipulations in physics; also statics, dynamics, optics, heat, and electricity; in biology the conditions are exceedingly well stated, as—*Physiology:* Fundamental principles of the chief physiological processes of plants and animals; general histology of their principal organs; *Morphology:* Fundamental principles of morphology as illustrated by forms representing the principal classes of the vegetable and animal kingdoms; principles of the classification of plants and animals; practical microscopical examination of the various tissues; dissection and description of typical plants and animals. The examinations will be held in common with those at Emmanuel and Sidney Sussex Colleges, as before.

The last Report of the Board of Natural Sciences Studies was to be offered for confirmation to-day (Thursday), at 2 P.M., and it was expected to be non-placeted, although it might be carried on a division.

PROF. BURDON-SANDERSON announces that he will begin a course of weekly lectures at University College, Gower Street, to ladies, on physiology, on Friday the 21st, at 4 P.M. The first lecture will be public.

MR. P. R. SCOTT LANG, M.A., B.Sc., F.R.S.E., who has for some years been assistant to the Professor of Natural Philosophy—Prof. Tait—in the University of Edinburgh, has been appointed by the Queen to the chair of mathematics in the University of St. Andrews.

MR. MARK FIRTH has signified his wish to found a chair of chemistry in connection with Firth College, Sheffield. He proposes to invest a sum sufficient to produce an annual income of 150*l*., and this, together with the fees of students, will amount, it is believed, to a sufficient sum. Mr. Firth proposes that the appointment shall be first filled by Dr. Carnelly, Owens College, Manchester.

THOSE of our readers interested in the higher education of girls may be glad to know that a Calendar of Queen's College. Harley Street, has been published.

THE *Golos* learns, according to the *Times* Berlin correspondent, that the Russian Government intends thoroughly changing the statutes of the University of Dorpat, in Livonia, that strong bulwark of German science and culture. Among the proposed alterations now under consideration in the Imperial Council, the chief one aims at restricting certain liberties hitherto enjoyed by German-speaking students and subjecting them to police surveillance similar to that now in force at all other Russian Universities.

SCIENTIFIC SERIALS

The American Journal of Science and Arts, October.—An examination of the chemical composition of amblygonite, by Mr. Penfield, leads him to give a new and more simple formula for the mineral. He shows that the hydroxyl group in amblygonite is isomorphous with fluorine.—From general geological sections in Iowa, Mr. McGee concludes that residuary clays and others of equal compactness were passed over by a thick ice-sheet with or without serious disturbance, and that the plane of contact between glacial drift and subjacent residuary clay is not always clearly defined.—Mr. Dale describes a peculiar fault at Rondout.—The first portion of a research, by Mr. Gibbs, on the vapour densities of peroxide of nitrogen, formic acid, acetic acid, and perchloride of phosphorus, is given, and the two remaining papers are from English publications (Crookes on radiant matter and Draper on oxygen in the sun).

The American Naturalist, October.—John A. Ryder, an account of a new genus of minute pauropod myriapod (with figures).—Wm. Barbeck, on microscopical fungi attacking our cereals.—C. L. Herrick, fresh-water entomostraca (describes and figures *Diaptomus longicornis*, n.sp.).—S. K. Lum, notes on the thrushes of the Washington Territory.—John Ford, the leather-turtle.—S. L. Frey, Were they mound-builders?—Recent literature: Proceedings of scientific societies.

The American Quarterly Microscopical Journal, vol. i. No. 4. —Prof. S. A. Forbes, on some sensory structures of young dog-fishes.—Dr. C. L. Anderson, spores with a spore glossary.—Dr. J. J. Woodward, on the oblique illuminator, and on a new apertometer.—F. H. Wenham, on Prof. Smith's apertometer. —John Mayall, on measuring aperture.—R. Hitchcock, aperture, angular and numerical.—J. D. Hyatt, on the tongue of the honey-bee.—Thomas Taylor, on oleomargarine and butter.—W. C. Hubbard, Haeckel *v.* Virchow.—Prof. Stowell, the origin and death of the red blood-corpuscle.—B. Eyferth, on the simplest forms of life.—An announcement from the publishers states "that the existence of the *Quarterly* ceases with this number." The editor found that it would be impossible for him to give the journal the necessary supervision during the coming year, hence the necessity of this suspension.

Journal of the Franklin Institute, October.—Prof. Thurston here publishes an investigation of the strength of American timber, several varieties of which (white and yellow pine, locust, black walnut, white ash, white and live oak) were submitted to testing machines in the Stevens Institute. The results show that American timber has a constructive value equal, if not decidedly superior, to European timber. (The numbers were almost invariably higher than those of Barlow, Tredgold, or

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Lastett.) Timber yields, under all forms of stress, to an extent about proportional to the load.—Mr. James Smith sketches a plan for water-supply of Philadelphia, *viz.*, a gravity-supply by aqueduct from Perkiomen.—A modification of Tisley's compound pendulum, by Mr. Queen, of Philadelphia, whereby the motions and figures may be exhibited on a screen to large audiences, is described, and there is an account of the zinc veins and works of Lehigh Valley.

Bulletin of the United States Geological and Geographical Survey of the Territories, vol. v. No. 2, September.—J. A. Allen, on the Coatis (genus Nasua, Storr).—Dr. Coues, on the present status of *Passer domesticus* in America.—Dr. Peale, on the Laramie group of Western Wyoming and adjacent regions.—A. R. Grote, on Lithophane and some new Noctuidæ (describes many new species).—Dr. A. White, Palæontological Papers, No. II., on carboniferous fossils from Colorado, Arizona, Utah, and Wyoming, and on cretaceous corals from Colorado (describes several new species).—F. V. Hayden, the so-called Two-Ocean Pass.—E. D. Cope, on the extinct species of Rhinoceridæ of North America, and their allies.—Dr. Coues, second instalment of American ornithological bibliography.

Bulletin de l'Académie Royale des Sciences de Belgique, No. 8.—M. Plateau here defends, at some length, his theory of the superficial viscosity of liquids in opposition to the theory of Signor Marangoni, who, without denying a viscosity proper to the surface and different from that of the interior, thinks its influence (*e.g.*, in retarding the movement of a needle on the surface) very small in comparison with that of other causes, especially, in liquids which can be inflated in large bubbles, the *elasticity* of a layer of impurity (*imbrattamento*) arising from exposure in the air, while in liquids like water and most saline solutions, changes in tension, through alteration of the surface and changes in curvature of the menisci at the sides of the needle, &c., are operative.—M. Petermann writes on the presence of grains of *Lychnis githago* in alimentary flour, and indicates a method of detecting it.—There is also a paper on the quartziferous diorite of Champ-Saint-Veron (Lembecq), by MM. Poussin and Renard.

Journal de Physique, October.—On the inscription of meteorological phenomena, particularly electricity and pressure, by M. Mascart.—On the rectifying apparatus of M. Duboscq, by M. Bertin.—On a phenomenon similar to Peltier's phenomenon, by M. Bouty.—A regulator of temperature, by M. Benoit.

Cosmos, 5 Heft, August.—Prof. Dr. Schultze, history of the origin of the "Despising" of Nature.—Ernst Haeckel, on the common relationship between the ctenophora and the medusæ, with an account of a form connecting the two groups. This extraordinary form is beautifully figured.—Dr. Mehlis, the barrowfield near Hagenau and its probable epoch.—Henry Potonié, Alexander Braun's attitude towards the theory of descent.—Short notices and criticisms.

THE *Nyt Magazin for Naturvidenskaberne* (Christiania, vol. 24, pt. 4, and vol. 25, pt. 1).—From these parts we note the following papers:—On the geology of the Folge Fon peninsula, by T. Ch. Thomassen.—On the ornithology of Madagascar, by Leonhard Stejneger.—On microline, a new species of triclinic potash-feldspar; its optical, crystallographical, and chemical characters, by A. Des Cloizeaux.—On the insect fauna of Dovrefjeld and the Gudbrands valley, by W. M. Schoyen.—On the changes which some plants undergo in northern latitudes by Prof. F. C. Schübeler.—On the occurrence of iridium in northern minerals, by S. Wleugel.—On dislocation lines in the so-called Skrimfjeld, by O. E. Corneliussen.—Diary of a journey in the Trysil district, by L. Meinich.—Account of a botanical tour in Hardangervidden, by N. Wille.—On some contact rocks of the Christiania Silurian basin, by A. Penck.

THE *Verhandlungen der k.k. geologischen Reichsanstalt* (No. 12, Vienna) contains the following papers:—On the miocene deposits at the south-western margin of the Galicio Podolian Plateau, by J. Niedzwiedzki.—On the tertiary formation at the eastern slope of the Vogelsberg, by H. Bücking.—On the pliocene mammal-fauna of Hungary, by Th. Fuchs.—On the Flysch question, by the same.—On the geological objects exhibited at Teplitz and relating to the Teplitz basin, by R. Raffelt.—On the marginal mountains of the Vienna bay, by Franz Toula.—The number further contains the following reports of geological excursions undertaken by different members of the Reichsanstalt, viz.: by Dr. O. Lenz from Eastern Galicia, by Dr. Edmund von Mojsisovics from Bosnia, by E. Tietze from Eastern Bosnia, and by Dr. A. Bittner from the Herzegowina.

SOCIETIES AND ACADEMIES

LONDON

Linnean Society, November 6.—Prof. Allman, president, in the chair.—Mr. W. H. Twelvetrees (of Orenburg, Russia) was elected a Fellow of the Society.—The President, in opening the session, briefly alluded to the demise of Mr. W. Wilson Saunders and Mr. John Miers, whose scientific and official labours in connection with the Society have been well appreciated.—Mr. W. T. Thiselton Dyer exhibited and made remarks on some photographs of vegetation, including *Cinchona Ledgeriana*, in the Botanic Garden of Buitenzorg, Java.—Mr. D. Morris, recently returned from investigating the coffee-leaf disease of Ceylon and South India, read a paper on the structure and habit of *Hemileia vastatrix*. He supports the Rev. R. Abbay's statements as to the destructive character of the fungus and its evident gradual extension over the coffee-producing regions of the East; he even expresses fears of its ultimately being carried to the West Indies and Brazil;—2,000,000*l*., the estimated annual deficiency in Ceylon alone, is no mean sum to be debited from the revenue and interests of the planters. Mr. Abbay has described the spores as attached to the inner surface of the orange-yellow sporanges (a notion opposed to received ideas respecting free cell formation); but Mr. Morris's observations are opposed to those of the former. The author explains the hitherto puzzling dark brown bodies beneath the sporanges as composed of closely interwoven threads of mycelium. During February, March, and April, both bark and leaves are everywhere covered exteriorly by mycelial filamentous threads which reproduce by germinating spores. In the wet weather these do not enter the stomata. It is in this stage that conidial growth supervenes according to Abbay (secondary spores of Thwaites), but the author has failed to substantiate this phase, though starved plants on glass slides raised conidia. It is during the filamentous stage before penetration that remedial agents—dusting with sulphur and lime, &c.—have a chance of being effective; but a serious disturbing element offers in the large area of abandoned crop still continuing to propagate the fungus.—Dr. F. Day read a paper on the instincts and emotions of fish. Biologists of late have been less attracted by the faculties of fish than of other animals, and even Cuvier's estimate of their total want of intelligence has been quite recently quoted as authentic. The author combats this notion, and, from his own experience and data afforded by other writers, claims evidence of emotions and affections. He shows they construct nests, transport their eggs, protect and defend their young, exhibit affection for each other, recognise human beings, can be tamed, manifest fear, anger, hatred, and revenge, utter sounds, hide from danger, betake themselves for protection to the bodies of other animals, and have other peculiar modes of defence, leave the water for food, and even different families combine for attack and defence. Their faculties, notwithstanding, are greatly subordinated and modified compared with those of higher races of the vertebrata.—The Rev. G. Henslow read a paper on the origin of the (so-called) scorpioid cyme. He pointed out some errors in deducing this from the dichotomous cyme: 1. Opposite pairs of bracts, being successively in planes *at right angles*, the resulting sympode would be a volute, and not a helix. 2. The position of the bracts (when present, as in *Borago*) are not opposite the flowers. 3. There are always *two* rows of flowers, not a single one. 4. The appearance of a flower in the fork between the two branches of the inflorescence (as in *Myosotis*) is not usual, and is due to the adhesion between the terminal and the highest axillary raceme. This has given rise to a false impression of dichotomy. 5. Authors have hitherto confounded the "true scorpioid raceme" (Henslow) with spicate degradations of sympodial inflorescence. He refers it to the indefinite system, and explains its origin by a new principle of phyllotaxis, which he first discovered in *Lagerstromia*, viz., in resolving opposite and decussate leaves into alternate, instead of their lying on a continuous spiral line, the line *oscillates* through three-fourths of a circle, and if a line be drawn from flower to bract, it will represent the so-called scorpioid cyme of Boragineæ.

Chemical Society, Nov. 6.—Mr. Warren De la Rue, F.R.S., President, in the chair.—The following papers were read:—On the transformation products of starch, by C. O'Sullivan. In this paper, which was originally presented to the Societe Chi-

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